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EXAMINER	
STEVENS, THOMAS H	

ART UNIT	PAPER NUMBER
2123	5

DATE MAILED: 04/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/728,407	RICKS ET AL.	
	Examiner	Art Unit	
	Thomas H. Stevens	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12/01/00 & 9/13/02*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12/01/00* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-25 have been examined and rejected.

Drawings

2. Drawings 5,11-14,15,22,24,27 and 37 are properties of DOME, which are well-known nodal simulation representations and thus should be labeled as prior art.

Claim Interpretation

3. Office personnel are to give claims their **"broadest reasonable interpretation"** in light of the supporting disclosure. *In re Morris,* 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim are not read into the claim. *In re Prater,* 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-551(CCPA 1969). See *also *In re Zletz,* 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322(Fed. Cir. 1989) ("During patent examination the pending claims must be interpreted as broadly as their terms reasonably allow") .... The reason is simply that during patent prosecution when claims can be amended, ambiguities should be recognized, scope and breadth of language explored, and clarification imposed .... An essential purpose of patent examination is to fashion claims that are precise, clear, correct, and unambiguous. Only in this way can uncertainties of claim scope be removed, as much as possible, during the administrative process. **The examiner equates "illegal synchronization" to unwanted or unauthorized synchronization and workstation to desktop. Also the examiner deduces the performance of the Space Shuttle Main Rocket Engine as periodic, aperiodic and continuous (Wells: pg. 514, left column, Task Allocation, lines 14-23).**

Claim Rejections - 35 USC § 103

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-25 are rejected under 35 U.S.C. 103 (a) as unpatentable by Wells et al. ("Parallel Simulation of a Large Aerospace System Multicomputer Environment" (1997)), in view of DOME Guide (Honeywell Software 1998).

Wells et al. teaches parallel simulation of hardware platforms within a test-bed aerospace system of multiprocessors in real-time; but doesn't expressly teach arcs between nodes.

DOME (Domain Modeling Environment) teaches a tool-set which is extensible collection of integrated model-editing, metamodeling and analysis tools supporting a

model-based development approach to system/software engineering (pg.2, first paragraph), which also includes simulation (pg. 4, line 9); and inherently teaches arcs between nodes (DOME: pg. 65, figure 28).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to use DOME to modify Wells et al. since arcing is an inherent graphical representation (DOME: pg. 65, figure 28). Since its inherent, it must be considered.

Claim 1: A system for enabling a user to create on a computer workstation a visually displayed architectural description of a computer simulation (Wells: pg. 507, lines 11-17) of a real system comprising:

a. a standardized set of graphical node elements (DOME: pg. 12) representing each of a plurality of pre-defined real system components, the real system components including processes and real system hardware associated with the real system (Wells: pg. 508, right column, lines 21-22);

b. a standardized set of graphical arc elements (Wells: pg. 519, table I, base topology) representing each of a plurality of pre-defined timing (Wells: pg. 510, left column, lines 3-9 and 37-39) control, and data relationships that can be associated with the pre-defined real system components;

c. each of the graphical node elements and arc elements displayed at a graphical user interface on the workstation and selectable by the user whereby the user can position selected node elements in a user-defined arrangement and connect two or more of the selected node elements (DOME: pg. 12) with one or more selected arc elements (Wells: pg. 519, table I, base topology) to create on the workstation the architectural description (DOME: pg.6, bullet 14) of the simulation of the real system;

d. a parameter data input window associated with at least some of the selected node (DOME: pg. A-8, Parameters) and arc elements, the parameter data input window allowing the user to associate parameter data with the selected node (DOME: pg. 12) and arc elements; and simulation architecture data files describing: the selected node and arc elements, the user defined arrangement of the node (DOME: pg. 14) and arc elements (Wells: pg. 519, table I, base topology), and the parameter data input by the user.

Claim 2: The system of claim 1 wherein the real system components (Wells: pg. 508, right column, lines 21-22) represented by the standardized set of node elements (DOME: pg. 14) includes external hardware devices (Wells: pg. 508), periodic processes, aperiodic processes, and continuous processes (Wells: pg. 514, left column, Task Allocation, lines 14-3).

Claim 3: The system of claim 2 wherein the standardized set of node elements (DOME: pg. 14) further includes at least one simulation (Wells: pg. 509, lines 17-28) container representing in a single graphical node element (Wells: pg. 519, table I, base topology) a plurality of the real system components.

Claim 4: The system of claim 3 (Wells: pg. 509, lines 17-28) wherein the standardized set of node elements further includes a boundary node (DOME: pg. 14, Instruction 11).

Claim 5: The system of claim 1 wherein the pre-defined timing, control, and data relationships represented by the standardized set (Wells: pg. 514, Task Allocation) of graphical (DOME: pg.12) arc elements (Wells: pg. 519, table 1, base topology) include data transfer between processes, synchronization between processes, and synchronization with data transfer between processes (Wells: left column, lines 11-16).

Claim 6: The system of claim 5 wherein the standardized set of graphical (DOME: pg.12) arc elements (Wells: pg. 519, table 1, base topology) further includes a communications container (DOME: pg. 41, Element Tools, line 5) representing in a single graphical arc element a plurality of the timing, control, and data relationships.

Claim 7: The system of claim 5 wherein the synchronization relationship (Wells: pg.514, left column, Task Allocation, lines 14-23) represented by one of the arc elements defines a synchronization (Wells: pg. 514, left column, Task Allocation, lines 14-23)

mechanism between a first node element representing a source process and a second node element representing a destination process (DOME: pg. A-4, figure 31) and the parameter data that can be linked to the arc elements representing a synchronization mechanism includes a sync release time relative to execution time of the source process and a sync frequency.

Claim 8: The system of claim 7 wherein the source and destination processes (DOME: pg. A-4, figure 31) connected by an arc element representing a synchronization (Wells: pg. 514, left column, Task Allocation, lines 14-23) mechanism can each be periodic, aperiodic, or continuous (Wells: pg. 514, left column, Task Allocation, lines 14-3).

Claim 9: The system of claim 8 wherein the synchronization (Wells: pg. 514, left column, Task Allocation, lines 14-23) mechanisms associated with an arc element selected by the user are tested for selection of an illegal synchronization relationship (Wells: left column, lines 12-19) between node elements selected by the user.

Claim 10: The system of claim 9 wherein the illegal synchronization relationships (Wells: left column, lines 12-19) tested by the; system include:

a. connecting a periodic; source process to a periodic destination (DOME: pg. A-4, figure 31) process with an arc element representing an aperiodic synchronization mechanism(Wells: pg. 514, left column, Task Allocation, lines 14-3);

b. connecting an aperiodic source process to a periodic destination process with an arc element representing a synchronization mechanism (Wells: pg. 514, left column, Task Allocation, lines 14-3); and

c. connecting to a single process (DOME: pg. 50, figure 22) with multiple arc elements (Wells: pg. 519, table 1, base topology) defining different synchronization mechanisms.

Claim 11: The system of claim 1 further comprising an output file generator operable to select and organize pre-defined portions (DOME: pg. 37, Document Generator) of the simulation architecture (Wells: pg. 519, table 1, base topology) data files into an electronic output file that can be used for generating computer code (DOME: pg. A-14) defining a computer simulation corresponding to the architectural description created by the user on the workstation.

Claim 12: A method of creating on a computer workstation a graphical description of the architecture of a simulation of a real world system comprising the steps of:

a. selecting at a graphical user interface (DOME: pg.55, line 1and pg.12; and Wells: pg. 519, table 1, base topology) one or more graphical node elements from a standardized set of graphical node elements displayed on the workstation, the selected node

elements (Wells: pg. 514, left column, lines 8-12) representing pre-defined real system components, including processes and real system hardware, associated with the real system;

b. selecting at the graphical user interface (DOME: pg.55, line 1and pg.12; and Wells: pg. 519, table 1, base topology) one or more graphical arc elements from a standardized set of graphical arc elements displayed on the workstation (DOME: pg. 55), the selected arc elements representing pre-defined timing, control, and data relationships between the selected node elements (Wells: pg. 514, left column, lines 8-12) ;

c. arranging on the graphical user interface the selected node elements (Wells: pg. 514, left column, lines 8-12) and connecting the selected node elements with the selected arc elements to create and display on the workstation (DOME: pg. 55) the architectural description of the simulation of the real system;

d. entering at one or more parameter data input windows (DOME: pg.57, Window Option) associated with at least some of the selected node (Wells: pg. 514, left column, lines 8-12) and arc elements parameter data that further defines properties of the selected node and arc elements found in the real world system; and

e. saving, in one or more simulation architecture data files (DOME: pg.68, Saving and Printing), data about the selected node and arc elements, data about the user-defined arrangement of the node (Wells: pg. 514, left column, lines 8-12) and arc elements, and the parameter data input by the user.

Claim 13: The method of claim 12 further comprising the step of generating an output file containing selected portions of the simulation architecture data files (Wells: pg. 514, left column, lines 8-34; and DOME pg. 37, Document Generator).

Claim 14: The method of claim 12 wherein the real system components represented by the standardized set of node elements (DOME: pg. 12) includes external hardware devices, periodic processes, aperiodic processes, and continuous processes (Wells: pg. 514, left column, Task Allocation, lines 14-23).

Claim 15: The method of claim 14 wherein the standardized set of node elements (Wells: pg. 514, left column, lines 8-12) further includes at least one simulation container (DOME: pg. 41, Element Tools) representing in a single node element a plurality of the real system components.

Claim 16: The method of claim 15 wherein the standardized set of node elements (Wells: pg. 514, left column, lines 8-12) further includes a boundary node (DOME: pg. 14, Instruction 11).

Claim 17: The method of claim 12 (DOME: pg.55, line 1and pg.12; and Wells: pg. 519, table 1, base topology) wherein the pre-defined timing, control, and data relationships (Wells: pg. 514, left column, lines 8-12) represented by the standardized set of arc elements includes data transfer between processes, synchronization between processes, and synchronization with data transfer between processes.

Claim 18: The method of claim 17(DOME: pg.55, line 1and pg.12; and Wells: pg. 519, table 1, base topology) wherein the standardized set of arc elements further includes a communications container (DOME: pg.41, Element Tools) representing in a single arc element a plurality of the timing, control, and data relationships (Wells: pg. 514, left column, lines 8-12).

Claim 19: The method of claim 17 wherein the synchronization relationship (Wells: pg. 514, left column, Task Allocation, lines 14-23) represented by one of the arc elements defines a synchronization mechanism between a first node element representing a source process and a second node element representing a destination process (DOME: pg. A-4, figure 31), and the parameter data that can be associated with the arc elements representing a synchronization mechanism includes a sync release time relative to an execution time of the source process and a sync frequency (Wells: pg. 512, 3rd paragraph, lines 1-19 and pg. 518, right column, lines 1-3).

Claim 20: The method of claim 19 wherein the source and destination processes (DOME: pg. A-4, figure 31) connected by an arc element representing a synchronization mechanism can each be periodic, aperiodic, or continuous (Wells: pg. 514, left column, Task Allocation, lines 14-23).

Claim 21: The method of claim 20 further comprising automatically testing the synchronization mechanisms (Wells: pg. 512, left column, 3rd paragraph, lines 1-19) associated with selected arc elements for use of an illegal synchronization relationship between selected node elements.

Claim 22:The method of claim 21 wherein the illegal synchronization relationships (Wells: left column, 3rd paragraph, lines 12-19) tested include: a connecting a periodic source process to a periodic destination process (DOME: pg. A-4, figure 31) with an arc synchronization mechanism;

b. connecting an aperiodic source process to a periodic destination process (DOME: pg. A-4, figure 31) with an arc element representing a synchronization mechanism (Wells: pg. 518, left column, lines11-22); and

c. connecting to a single process with multiple arc elements (Wells: pg.519, Table I, Base Topology) defining different synchronization mechanisms.

Claim 23: The method of claim 13 further comprising organizing data in the output file (DOME: pg. 37, Document Generator; and Wells: pg. 514, left column, lines 8-34) for use in generating computer code defining a computer simulation corresponding to the architectural description created by the user on the workstation.

Claim 24: A system for creating a graphical representation of the architecture of a computer simulation of a real world system comprising (Wells: pg. 508, right column, lines 5-13):

a. a computer workstation having a processor, display, keyboard, an operating system causing the processor (Wells: pg. 514, lines 8-12) to generate a cursor on the display, a pointing device for manipulating the cursor on the display (DOME: D-16), and a data storage device;

b. a first software module (DOME: pg. A-14, lines 26-27) generable to generate a graphical user interface on the display;

c. a second software module operable to display on the graphical user interface a pre-defined set of graphical node elements (Wells: pg. 514, left column, lines 8-12), the node elements representing pre-defined (Wells: pg. 514, Task Allocation) real system components, the real system components including processes and real system hardware associated with the real system (DOME: pg. 6, line 29);

d. a third software module operable to display on the graphical user interface a pre-defined set of graphical arc elements (Wells: pg.519, Table I, Base Topology), the arc elements representing pre-defined timing, control, and data relationships that can be associated with the real system (DOME: pg. 6, line 29)components;

e. the second software module further operable to allow the user, using the pointing device(DOME: D-16), to select one or more of the node elements and position the selected node elements in a user-defined (DOME: pg. 6, line 15)arrangement on the display corresponding to the simulation architecture;

f. the third software module further operable to allow the user, using the pointing device, to select one or more of the arc elements and position the selected arc elements on the display to connect the selected and positioned node elements so as to associate one of the pre-defined timing, control, and data relationships with the node elements connected by the selected arc elements;

g. a fourth software module operable, in conjunction with the graphical user interface, to open parameter data input windows (DOME: pg. 9, figure 2) linked to one or more of the selected node (DOME: pg. 12) and arc elements (Wells: pg.519, Table I, Base Topology), and receive from the user parameter data further defining properties (DOME: pg. 45) of the linked node and arc elements; and

h. the operating system further operable to store on the data storage device simulation architecture data files containing data representing: the selected node and arc elements, the arrangement of the selected node elements, the connection of the selected node elements by the selected arc elements, and the parameter data input by the user (DOME: pgs 45, 53 and 65 (figure 28)).

Claim 25: The system of claim 24 further comprising an output file generator module (DOME: pg. 37, document generator) operable to select and organize pre-defined portions of the simulation architecture data files into an electronic output file that can be used for generating computer code that defines a computer simulation (Wells: pg. 514, left column, lines 8-34) corresponding to the architectural description created by the user on the workstation.

Correspondence Information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom Stevens whose telephone number is (703) 305-0365, Monday-Friday (8:30 am- 5:30 pm) or contact Supervisor Mr. Kevin Teska at (703) 305-9704. The fax number for the group is 703-872-9306.

Any inquires of general nature or relating to the status of this application should be directed to the Group receptionist whose phone number is (703) 305-3900.

March 29, 2004

THS

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